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In the Claims:

Please amend the claims as follows:

1-20 (canceled)

21. (currently amended) A method of guiding a vehicle, the method comprising:

establishing elevation data and corresponding location data for a work area;

determining location data, including a particular location of a vehicle, within the work area divided into cells;

estimating at least one of roll data and pitch data corresponding to the particular location, the roll data associated with a corresponding lateral slope, the pitch data associated with a corresponding longitudinal slope generally perpendicular to the lateral slope;

guiding the vehicle steering in a direction of travel with compensation data based upon at least one of the estimated roll data and the pitch data such that an actual path of the vehicle follows a target path, an aspect representing a direction of maximum slope of ground with respect to a reference point for each cell traversed by the vehicle corresponding to the particular location and used to determine the respective estimated roll data and pitch data for the particular location, the aspect defined as an angle between the direction of travel of the vehicle and the direction of maximum slope, the maximum slope comprising the lateral slope and the longitudinal slope as components of the maximum slope.

22. (previously presented) The method according to claim 21 wherein the roll data comprises a roll angle and wherein the pitch data comprises a pitch angle.

23. (currently amended) The method according to claim 21 wherein ~~the work area is divided into a group of cells, and wherein~~ each cell is associated with a corresponding elevation data and respective location data.

24. (previously presented) The method according to claim 21 further comprising establishing respective slope data and aspect data associated with the location data, the slope data indicating a change in elevation of terrain in the work area and the aspect data indicating the direction of slope.

25. (previously presented) The method according to claim 21 wherein the target path comprises a substantially linear or arc path segment.

26. (previously presented) The method according to claim 21 wherein the guidance comprises generating a steering compensation data to compensate for changes in the roll data and pitch data between an uncorrected vehicular path and the target path.

27. (previously presented) The method according to claim 21 wherein the estimating comprises estimating the pitch data based on one or more of the following: location data, elevation data, a current position of the vehicle, an expected position of the vehicle, vehicle speed, vehicle heading, vehicular velocity, and a path plan.

28. (previously presented) The method according to claim 21 wherein the estimating comprises estimating the pitch data consistent with the following equation:

$\theta(Pitch \quad angle) = \Theta_x = \arcsin(\sin\Theta \sin\Psi)$, where $\Psi$ is the aspect, $\Theta$ is the slope, and $\Theta_x$ is the longitudinal slope angle.

29. (previously presented) The method according to claim 21 wherein the estimating comprises estimating the roll data based on one of more of the following: location data, elevation data, a current position of the vehicle, an expected position of the vehicle, vehicle speed, vehicle heading, vehicular velocity, and a path plan.

30. (previously presented) The method according to claim 21 wherein the estimating comprises estimating the roll data consistent with the following equation:

$\Phi(Roll \quad angle) = \Theta_y = \arcsin(\sin\Theta \cos\Psi)$, where $\Psi$ is the aspect, $\Theta$ is the slope, and $\Theta_y$ is the lateral slope.

31. (withdrawn) A system of guiding a vehicle, the system comprising:

a data storage device for storing elevation data and corresponding location data for a work area;

a location-determining receiver for determining a particular location of a vehicle within the work area;

a data processor comprising a roll estimator for estimating a roll data and a pitch estimator for estimating pitch data corresponding to the particular location; and

a steering controller for guiding the vehicle utilizing the estimated roll data and the pitch data such that the vehicle follows a desired path.

32. (withdrawn) The system according to claim 31 wherein the roll data comprises a roll angle and wherein the pitch data comprises a pitch angle.

33. (withdrawn) The system according to claim 31 wherein the work area is divided into a group of cells, and wherein each cell is associated with a corresponding elevation and a respective location.

34. (withdrawn) The system according to claim 31 wherein the data storage device further stores respective slope data and aspect data associated with the location data, the slope data indicating a change in the elevation and the aspect data indicating the direction of the slope.

35. (withdrawn) The system according to claim 31 wherein the desired path comprises a substantially linear and arc path segment.

36. (withdrawn) The system according to claim 31 wherein the data processor generates a steering compensation signal to compensate for changes in the roll data and pitch data between a first location and a second location within the work area to conform to the desired path.

37. (withdrawn) The system according to claim 31 wherein the pitch estimator estimates the pitch data based on one or more of the following: location data, elevation data, a current position of the vehicle, an expected position of the vehicle, vehicle speed, vehicle heading, vehicular velocity, and a path plan.

38. (withdrawn) The system according to claim 31 wherein the pitch estimator estimates the pitch data consistent with the following equation:

$\theta(Pitch \quad angle) = \Theta_x = \arcsin(\sin\Theta \sin\Psi)$, where $\Psi$ is the aspect, $\Theta$ is the slope, and $\Theta_x$ is the longitudinal slope.

39. (withdrawn) The system according to claim 31 wherein the roll estimator estimates the roll

data based on one of more of the following: location data, elevation data, a current position of the vehicle, an expected position of the vehicle, vehicle speed, vehicle heading, vehicular velocity, and a path plan.

40. (withdrawn) The system according to claim 31 wherein the roll estimator estimates the roll
data consistent with the following equation:

$\Phi(Roll\ \ angle) = \Theta_y = \arcsin(\sin\Theta\cos\Psi)$, where $\Psi$ is the aspect, $\Theta$ is the slope, and $\Theta_y$ is the lateral slope.

41. (new) The method according to claim 21 wherein the aspect represents a radial direction of maximum slope.

42. (new) The method according to claim 28 wherein the equation is supplemented by at least one of a static force balance equation and a dynamic force equation considering one or more of the following variables: vehicle geometry, vehicle size, tire geometry, vehicle weight and load, vehicle wheelbase and spacing, forces acting on the tires of the vehicle, and velocities and accelerations of the vehicle and their components.

43. (new). The method according to claim 30 wherein the foregoing equation is supplemented by at least one of a static force balance equation and a dynamic force equation considering one or more the following variables: vehicle geometry, vehicle size, tire geometry, vehicle weight and load, vehicle wheelbase and spacing, forces acting on the tires of the vehicle, and velocities and accelerations of the vehicle and their components.